# Performance Evaluation in Virtual Organizations

Thongchai Sengsri[1], E. Ilamathian[2]

## Introduction

Around the 1960s and on to today, the environment of organizations has changed a great deal. A variety of driving forces provoke this change. Increasing Information communication technologies (ICT) has "shrunk" the world substantially. Increasing diversity of workers has brought in a wide array of differing values, perspectives and expectations among workers. Public consciousness has become much more sensitive and demanding that organizations be more socially responsible. Virtual organizations were almost unheard of a decade ago, but today they are an integral part of every organization. The recent "offshore outsourcing" trend and the growth of the Internet and similar globally linking technologies are major contributor to the increase in the use of virtual Organizations. Virtual Organizations are made up of people working on interdependent tasks and interacting largely via information communication technologies to achieve a common goal without concerns of time and space. Such teams carry out many critical functions, including information collection and dissemination, decision making, and implementation. Virtual Organizations present new challenges to business talents in evaluating a perfect evaluation system for employee performance as well as the organizational performance.

Cultural, geographic, and time differences make it challenging for a virtual team to provide structure to followers, evaluate their performance, inspire and develop them, and enable them to identify with the organization. As Avolio, Kahai, and Dodge (2001) indicate, there is new frontiers rapidly opening focusing on what constitutes effective performance evaluation in the information environment. Performance evaluation in virtual organizations remains a widespread and common practice despite documented criticism of the process by practitioners and researchers alike. Exhaustive research has been conducted on a range of related topics with limited advances in the understanding and practice of performance evaluation system. Lack of efficient ways to evaluate performance evaluation systems within virtual organizations has discouraged advances in theory related to performance evaluation as an organizational phenomenon. However, studying individual variables has proved so inadequate at explaining the intricacies of performance evaluation in virtual organization that researchers are attempting more comprehensive evaluation techniques. Attitudes and perceptions of performance evaluation by participants within the context of the organization in which the process operates are now being conducted using mining in mobile and email communications, and opinions among employees in virtual organizations.

The literature suggests relative agreement regarding the structural and procedural components of a "well-designed" performance evaluation system. Clearly there is more to an effective performance evaluation system than a technically sound rating format and well defined policies and procedures. There is however, no commonly accepted method or efficient approach to evaluate the effectiveness or success of a performance evaluation system based on a set of well-defined variables. Identifying and organizing the most important variables in performance evaluation has proved to be a challenging task to

---

[1] Lecturer, Faculty of Education, Naresuan University, THAILAND

[2] Director, Amity Global Business School, Chennai, INDIA

researchers and practitioners. Fairness however, is one variable that has been indicated to be a key component in the ultimate success of performance evaluation systems. Evaluating performance evaluation systems using a theoretical foundation drawn from organizational justice offers researchers the opportunity to examine how the fairness of different aspects of performance evaluation may affect the ultimate success of such organizational systems.

A questionnaire that satisfies organizational justice theory has been proposed in this research for 360° performance assessment. Both the research community and organizations can benefit by examining the topic of performance evaluation in virtual organizations using mobile and email social network mining, opinion mining and 360° assessment. Researchers and practitioners need to know the role of a virtual organization's "virtuality" in influencing employee interactions and its effects on their own performance towards the organizational objectives. The growing size of the organizations, the competition in the labor market and the importance of the performance management and appraisals have given way to the use of performance appraisal software. Many companies providing the HR services and the software companies provide the performance appraisal software. The performance appraisals software automates the appraisal processes and assists the HR by adding online capacities to the processes. The performance appraisal software can be customized according to the needs of the organization. The various forms and other processes can be designed in accordance to the practices being followed in the organization.

The software standardizes the appraisal process. The software applications also have guidelines for the users to guide them throughout the process, alerting the users about the errors and mistakes (if any), suggesting the appropriate language to be used, provides a systematic records of the necessary documents to the rater and the HR Department. Several software packages are available which also provide the 360 degree review program so that employees can get a multi-rater feedback about their performance.

## Electronic Performance monitoring

Electronic performance monitoring refers to the use of technology to monitor the employee's performance. Organizations across the world are incorporating the use of various advanced technologies for all functions at all levels. Many organizations have incorporated technologies in the Performance Evaluation and management processes. The electronic and computerized systems are being used to monitor and evaluate the performance of the employees. The concept of electronic performance management has been the latest trend in performance surveillance in the foreign countries where almost every job has the potentials of being monitored electronically. But with the increasing number of MNC's, the trend is catching up fast in India. With the organizations using the latest technologies and software, electronic performance monitoring supports comprehensive, qualitative, and subjective assessment of the individual's performance. The main reasons for practicing electronic performance monitoring are:

▸ It improves productivity and the quality of work

▸ Subjective work evaluation

▸ Compliance with the organizational policies and the local laws

▸ Helps in cost-control in the company

▸ Helps in the security of the company information

Despite all its advantages, the arguments given against the use of electronic performance monitoring is that such systems interfere in the privacy of the employees and some employees may take it against their dignity. Using such system can have both positive and negative effects on the organizational health. It is argued that, to ensure the positive effects of electronic performance monitoring:

▸ The employees should be explained and communicated clearly about the system

▸ The employees suggestions should be taken in designing the system

▸ The employees should be involved in the implementation of the system

▸ The organization should not solely rely on the system for the data on employees' performance.

▸ The system should be supported by effective two way communication and feedback.

The monitoring should be restricted to the performance related activities only. By using the performance appraisal software, an organization can reap the following benefits:

▸ The performance appraisal software can be implemented organization wide, covering all the employees at the levels (from lowest rank to top management) and across all the branches of the organization throughout the world.

▸ Designed with the latest technologies, they are easy to understand and make things structured, organized and standardized throughout the organization.

▸ Performance Measures, KPI and KRA's, goals and objectives for each employee, team and department can be weighted and listed according to their importance and priority.

▸ Use of the standard performance appraisal software can help to reduce the subjectivity and the bias in the ratings of the appraisers.

▸ It facilitates the calculations and adjustments of the performance related pay and other related HR decisions.

▸ Automatic reminders can be sent to the employees and the concerned authorities for the due appraisals.

▸ It helps the HR department in appraising the performance and to manage the performance of the employees efficiently and effectively.

▸ Helps to improve the productivity of the employees and employee retention in the organization.

▸ Keeps a detailed record of the past performances and the Performance Reviews of the employees.

## Current Trends using Data Mining

This Performance Evaluation concentrates on the future, based on the performance of the past and helps in developing the personal interests of the employees in alignment to the organizational goals. With the help of the potential appraisal form, the employees/ individuals are judged on various performance and behavioral parameters like:

▸ The performance areas in which the improvement or development is indicated.

▸ The accomplishments and the targets achieved in the current appraisal period

▸ Overall rating of the performance

▸ What skills, knowledge, competencies and qualities should be developed?

▸ Has the employee taken any steps for improving his performance and his career development?

▸ Recommendations for the training and development of the employee

▸ Updating knowledge on the latest developments on their job related and subject areas.

▸ Rate the employee on the following characteristics or how does the employee fair on following behavioral characteristics: Decision making, Independent, Confidence towards the job, Handling stress and pressure, Inter-personal skills, both with superiors and subordinates, Talentsship, motivating and conflict handling

The past performance of the employee and the potential of performing in future helps to identify the hidden talents. Data mining provides a way for identifying the future hidden talents from the past and present history records of information. Domain Driven Data Mining focuses on identifying the hidden talents for a particular domain, i.e., BPO in this research.

## Proposed domain driven data mining approach

D3M aims to construct next-generation methodologies, techniques and tools for a possible paradigm shift from data-centered hidden pattern mining to domain-driven actionable knowledge delivery. In deploying data mining into the real-world performance evaluation system, it has to be catered for business scenarios, organizational factors, user preferences and business needs. However, the current data mining algorithms and tools often stop at the delivery of patterns satisfying expected technical interestingness. Business people are not informed about how and what to do to take over the technical deliverables. The gap between academia and business has seriously affected the widespread employment of advanced data mining techniques in greatly promoting enterprise operational quality and productivity. To narrow down the gap, cater for real world factors relevant to data mining, and make data mining workable in supporting decision-making actions in the real world, the methodology of Domain Driven Data Mining (D3M for short) has been proposed for the problem of solving performance evaluation system in virtual organizations.

In this research, the concept map of D3M, theoretical underpinnings, several general and flexible frameworks, research issues, possible directions, application areas etc related to D3M has been addressed. Domain Driven Data Mining (D3M for short) targets the development of next-generation data mining methodologies, frameworks, algorithms, evaluation systems, tools and decision support, which aim to promote the paradigm shift from data-centered hidden pattern mining to domain-driven actionable knowledge discovery (AKD). To this end, D3M needs to involve and integrate human intelligence, domain intelligence, data intelligence, network intelligence, organizational and social intelligence, and the meta-synthesis of the above ubiquitous intelligence. As a result of the D3M based performance evaluation system, the AKD system can deliver business-friendly and decision-making rules and actions that are of solid technical and business significance. In data mining community, there is a big gap between academic objectives and business goals, and between academic outputs and business expectations. However, this runs in the opposite direction of KDD's original intention and its nature.

It is also against the value of KDD as a discipline, which generates the power of enabling smart businesses and developing business intelligence for smart decisions in production and living environment. From both macro-level and micro-level, it has been found reasons asking for new methodology and paradigm shift such as domain driven data mining. On the macro-level, issues related to methodological and fundamental aspects include the following:

▸ An intrinsic difference existing in academic thinking and business deliverable expectation; for example, researchers usually are

interested in innovative pattern types, while practitioners care about getting a problem Solved;

▸ The paradigm of KDD, whether as a hidden pattern mining process centered by data, or an AKD-based Problem-solving system; the latter emphasizes not only innovation but also impact of KDD deliverables.

The micro-level issues are more related to technical and engineering aspects, for instance,

▸ If KDD is an AKD-based problem-solving system, we then need to care about many issues such as system dynamics, system environment, and interaction in a system;

▸ If AKD is the target, we then have to cater for real world aspects such as business processes, organizational factors, and constraints.

D3M advocates a framework of actionable knowledge discovery. The Actionable Knowledge Discovery (AKD) is the procedure to find the Actionable Pattern Set through employing all valid methods such as mobile and email social network mining, opinion mining and 360º assessment. 360º assessment is used to identify data and domain intelligence; Mobile social network mining is used to extract network intelligence; Email social network mining is used to discover human intelligence; Opinion mining is used to mine social intelligence. Combining all the above intelligence is called Meta synthesis of Ubiquitous Intelligence that gives the overall solution for performance evaluation in virtual organizations. Both subjective and objective technical as well as business interestingness measures have been made using Domain Driven Data Mining approach.

## 360º Assessment for Data & Domain Intelligence

360-degree is an assessment tool that provides employees with feedback about their performance. Supervisors, peers, and, where appropriate, customers answer questions about an individual's skills and attributes. The employees are often rated in areas such as performance evaluation based upon four-factor model. Employees also rate themselves in these areas. All of the information is compiled into an individual report for each employee. The reports show employees' strengths and weaknesses according to the 360º survey responses. Participants use this information to make changes in their behavior and performance. 360º feedback allows employees to assess strengths and weakness in their workplace performance, interpersonal communication and/or management style with a focus on individual and organizational development. Employees and executives can use the information provided by 360-degree feedback to create organizational and individual development plans.

Employees and executives also gain tremendous personal benefit as they see how their performance evaluation and methods are perceived by those they manage. As they make adjustments to better manage their employees, the entire organization benefits from the improved productivity. Employees and executives can use the information provided by 360 feedback to create organizational and individual development plans. Employees and executives also gain tremendous personal benefit as they see how their performance evaluation are perceived by those they manage. As they make adjustments to better manage their employees, the entire organization benefits from the improvement to productivity. More than 90% of the companies are using a type of 360º assessment as the traditional standard method for identifying their employee's performance evaluation. In this research, the traditional records are not neglected. Those records are also used to retrieve data and domain intelligence in D3M. The past 360º feedback records are stored and mined for

retrieving both data and domain intelligence of an employee. Data intelligence refers demographic (personal) and performance measures of an employee from his past historical record. Domain intelligence means that the domain knowledge possessed by the employee from the work flow data and operational information.

## Mobile and Email Social Network Mining for Network and Human Intelligence

Social Network Mining or SNM is a set of methodologies that maps the interactions and relationships between people, teams and organizations. SNM is ideally suited for helping us think about virtual teams and virtual organizations. Research in a number of fields has shown that social networks operate on many levels, from organizations up to the level of nations, and play a critical role in determining the way problems are solved, organizations are run, and the degree to which individuals succeed in achieving their goals. Social Network Mining views relationships in terms of nodes and ties. This SNM analyses the attributes such as the importance of relations, actors' embeddedness, the social utility of connections, the structural patterning, the pattern of direct and indirect ties within which employees are embedded in the whole organization, the inter-organizational linkages to evaluate employee performance.

Performance evaluation is considered to be one of the key ingredients for the success of any organization. What makes a personality trait-such as the ability to interpret emotional cues, to connect with other people, to detect cheaters, to gossip and trade favors-a property of the social network are the rules that govern how individual members interact and cooperate. Many large organizations are undergoing a profound shift from traditional hierarchical structures to networked systems of people, and teams. At the advent of

Information and communication technologies, automated Mining technologies are nowadays very essential. Globalization and the revolution in information technology have restructured both industries and companies and require that both survive in a highly competitive Information Communication Technologies (ICT). Management challenges include working with a diverse workforce that is spread all over the globe and connected by mobile and email or internet. Command-and-control performance evaluation strategies rooted in a bureaucratic paradigm are largely ineffective.

Constraints of distance that once made widely distributed teaming difficult or impossible are now removed with information communication technologies that allow instant text, voice and video interfaces. With distance removed as a barrier, virtual organizations can become globally distributed with members from different organizations, different cultures and different functional backgrounds. The advantages of these virtual organizations using mobile and email social network mining with the help of mobile and e-mail communications made among the employees and manager include reduced costs, greater accessibility to expertise, and more effective deployment of resources. Social network forms virtual organizations that generate a host of new management issues about how to manage work in the absence of strict reporting relationships by a virtual manager. In this sense, performance evaluation in virtual organizations is a network effect that can result in highly responsive and effective employers.

On the other hand, if networked organizations can be designed that select for certain performance evaluation roles, its competencies can be measured, evaluated, and improved upon, and then performance evaluation ceases to be an ineffable quality, but becomes a

tangible asset that can be learned, improved upon, and replicated. The communications between employees are automatically extracted using Call Data Record (CDR) files of mobile and email logs and those attributes are taken for Social Network Mining, which overcomes the constraints due to human bias factors. This is kept as a subjective measure in our study according to the phenomenal domain driven data mining framework. Mobile and email Social Network Mining is adopted in this research for mining performance evaluation behaviors more effectively and automatically using mobile CDR files and email log files stored in the server during employee mobile and email communication. Mobile social network mining is used to mine network intelligence in D3M and e-mail social network mining is used to identify human intelligence in D3M.

## Opinion Mining for Social Intelligence

The Web has dramatically changed the way we express opinions about an employee performance that a customer or any employee realized, or for services that the customer received in the various industries. Opinions and reviews can be easily posted on the Web by maintaining a review portal, or blog for employees. These data are commonly referred to as user-generated content or user-generated media. Both the employees inside the organization, as well as potential customers are very interested in this online opinion polling, as it provides employers service/performance on their customers likes and dislikes, as well as the positive and negative comments on their services rendered, giving them better knowledge of their services provided, limitations and advantages over competitors; and also providing potential customers with useful and valuable information on the services to aid in their decision making process such as performance appraisal and promotion for their employees.

Nowadays the rise of social media such as blogs and social networks has fueled more interest in opinion mining.

With the proliferation of reviews, ratings, recommendations and other forms of online expression, online opinion has turned into a kind of virtual currency for businesses looking to market their products, identify new opportunities and manage their performance evaluation. In recent years, performance evaluation and opinion mining services using the articles written in employee blogs in the company web site have been developed. To improve the accuracy of the performance evaluation and the opinion mining, we have to extract emotions or reactions of writers of documents accurately. That is, to estimate emotions represented by emoticons is important for performance evaluation and opinion mining. It is a kind of Web mining technology used to analyze sentences posted to blogs/customer review sites/SNS to determine if the sentence writer has positive or negative impressions of, for example, a particular product. To accomplish this, performance evaluation and opinion mining utilizes the technology of natural language processing, and typically analyzes the emotional words that appear in the text.

As businesses look to automate the process of filtering out the noise, understanding the conversations, identifying the relevant content and actioning it appropriately, many are now looking to the field of opinion mining. If web 2.0 was all about democratizing publishing, then the next stage of the web may well be based on democratizing data mining of all the content that is getting published. Since NewGen Imaging systems Pvt. Ltd is an e-publishing (a type of BPO) company, this opinion mining is used as a tool to identify social intelligence for an employee technical performance or e-publishing services provided by him. Generally speaking, opinion

mining aims to determine the attitude of a speaker or a writer with respect to some topic or the overall contextual polarity of a document. The attitude may be his or her judgment or evaluation, affective state (that is to say, the emotional state of the author when writing), or the intended emotional communication (that is to say, the emotional effect the author wishes to have on the reader). Opinion mining refers to the application of natural language processing, computational linguistics, and text analytics to identify and extract subjective information in source materials. A basic task in opinion mining is classifying the polarity of a given text at the document, sentence, or feature/aspect level — whether the expressed opinion in a document, a sentence or an entity feature/aspect is positive, negative, or neutral. Advanced, "beyond polarity" sentiment classification looks, for instance, at emotional states such as "angry," "sad," and "happy."

Performance evaluation is the process of obtaining, analyzing and recording information about the relative worth of an employee. The focus of the performance evaluation is measuring and improving the actual performance of the employee and also the future potential of the employee. Its aim is to measure what an employee does. The main objectives of Performance evaluation is:

▸ To review the performance of the employees over a given period of time

▸ To judge the gap between the actual and the desired performance

▸ To help the management in exercising organizational control

▸ Helps to strengthen the relationship and communication between superior – subordinates and management – employees

▸ To diagnose the strengths and weaknesses of the individuals so as to identify the training and development needs of the future

▸ To provide feedback to the employees regarding their past performance

▸ Provide information to assist in the other personal decisions in the organization

▸ Provide clarity of the expectations and responsibilities of the functions to be performed by the employees

▸ To judge the effectiveness of the other human resource functions of the organization such as recruitment, selection, training and development

▸ To reduce the grievances of the employees

According to Flippo (1984), a prominent personality in the field of Human resources, "performance evaluation is the systematic, periodic and an impartial rating of an employee's excellence in the matters pertaining to his present job and his potential for a better job." Performance evaluation is a systematic way of reviewing and assessing the performance of an employee during a given period of time and planning for his future. It is a powerful tool to calibrate, refine and reward the performance of the employee. It helps to analyze his achievements and evaluate his contribution towards the achievements of the overall organizational goals. By focusing the attention on performance, performance evaluation goes to the heart of personnel management and reflects the management's interest in the progress of the employees.

The most difficult part of the Performance evaluation process is measuring the actual performance of the employees that is the work done by the employees during the specified period of time. It is a continuous process which involves monitoring the performance throughout the year. This stage requires the careful selection of the appropriate techniques of measurement, taking care that personal bias does not affect the outcome of the process and providing assistance rather than interfering in an employees work. The

actual performance is compared with the desired or the standard performance. The comparison tells the deviations in the performance of the employees from the standards set. The result can show the actual performance being more than the desired performance or, the actual performance being less than the desired performance depicting a negative deviation in the organizational performance. It includes recalling, evaluating and analysis of data related to the employees' performance. The result of the appraisal is communicated and discussed with the employees on one-to-one basis. The last step of the process is to take decisions which can be taken either to improve the performance of the employees, take the required corrective actions, or the related HR decisions like rewards, promotions, demotions, transfers etc.

The rapid developments in the information technology have not left any sphere of the human work life untouched. The organizations are growing in size, functions, are working across nations and thus are becoming more and more complex to handle. More and more organizations are integrating information technology (IT) in their human resource (HR) activities to improve their effectiveness. Technology helps to measure and manage the employee performance. It helps to automate the processes of HR and save time and cost and reduce the efforts required and the paperwork. According to a survey, more than 30 percent of the respondent organizations are already using or are planning to buy software for the performance management in the organization. To help and automate the processes of Performance Evaluation and management, organizations are increasingly taking the help of various performance management software like workforce performance management (WPM) suite systems and talent management systems, which help to systematically record all the data about the employee performance, pre-determined targets and the results achieved, compensation, succession planning and other related HR systems. The various forms can be filled online and can be submitted to the HR. The information is systematically stored in metrics where the current employee performance can be compared with the targets and the standards. These systems also help to analyze the training needs of the employees, systematically monitor their progress and their review and feedback and the improvement in the performances. Such software systems are provided by IT companies which they help to implement and integrate in the processes of the organizations. The organizations today have the choice of buying a ready to use licensed software package or can get a customized software system prepared according to its own needs and requirements

Techniques of potential appraisal are Self–appraisals, Peer appraisals, Superior appraisals, Management By Objective (MBO), Psychological and psychometric tests, Management games like role playing, Talentsship exercises, Access centers and 360 degree assessment etc. Potential performance evaluation helps to identify what can happen in future so that it can be guided and directed towards the achievement of individual and organizational growth and goals. Therefore, potential should be included as a part of the performance evaluation in organizations. Potential performance evaluation is an important part of the appraisal process. Appraising an employee's potential helps to evaluate and his/her capability for growth and development to greater challenges, responsibilities and positions in the organizational hierarchy. Most organizations incorporate potential appraisal in their appraisal processes for identifying and developing suitable employee base for successive planning. The performance measures include

Communication skills, Inter-personal skills, Problem-solving, Team work, Adaptability/ Flexibility, Initiative, Decision Making, Talentsship, Maturity and Organizational Citizenship Behavior (OCB). Performance evaluation is being practiced in 90% of the organizations worldwide. Though, self evaluation and potential evaluation also form a part of the performance evaluation processes, the performance evaluation in virtual organizations is construed as the current topic for research.

The study was conducted in a large BPO company, NewGen Imaging Systems Pvt. Ltd located in India, Thailand and USA during spring 2010. Three virtual organizations of the same management which are geographically dispersed in different locations were selected for the study. All the branches have used the same performance evaluation process since it was introduced as a mandatory requirement by the HR Manager of the above studied company. The virtual organizations studied have significantly different missions and work processes and employs different classifications of employees; one is predominantly technical and scientific with many professional and clerical positions while the other is an e-publishing service provider. The oversight for the statewide performance evaluation system is maintained by the Human Resource (HR) department but each individual virtual organization is responsible for implementing the system. The only measurement of the virtual performance evaluation system to this point has been the determination of the rate of usage of the system electronically.

The field of human resources management (HRM) has slowly shifted its focus from the individual to a greater consideration of multiple levels: individual, group, work process, and organization (Swanson and Holton, 1997). Social Network Mining refers to methods presenting data on interpersonal relationships in graph form (Burt and Minor 1983, Scott 1992, Wasserman and Faust 1994).

Creating a balance between interpersonal dynamics and the working environment is critical to organizational effectiveness (Cohen, 1990; Sambrook, 2005; Yamnil and McLean, 2001). Structural holes can help explain the upward mobility of an individual because of their ability to control the flow of career-related information within an organization (Burt, 1992, 1997; Mizruchi, 2000; Podolny and Baron, 1997). Centrality measures can help predict perceived levels of power within organizational units (Bonacich, 1987; Brass and Burkhardt, 1992; Cook and Emerson, 1978; Ibarra and Andrews, 1993; Krackhardt, 1990). A person's strength of tie can help to predict the transfer of knowledge from one work team to another (Cross et al., 2001; Hansen, 1999; Simonin, 1999; Stasser, Vaughan, and Stewart, 2000; Lynham, 2002; Feld, 1997). SNM can provide the HRM practitioner with an initial assessment of the social structure of the organization and allow them to identify the central employees, who may be considered as opinion managers (Leonard-Barton, 1985; Rogers, 1983). HRM practitioners are often confronted with learning transfer issues that have not demonstrated return on investment for the organization (Rouiller and Goldstein, 1993). In making the link from social networks to performance evaluation, we borrow freely from the entire corpus of social network theory (Kilduff and Tsai, 2003) and from two perspectives in recent performance evaluation theory: the cognitive revolution in performance evaluation research (Lord and Emrich, 2001) and the theoretical and empirical work that seeks to extend the manager-member exchange (LMX) perspective (e.g., Graen and Uhl-Bien, 1995; Liden, Sparrowe, and Wayne, 1997; Sparrowe and Liden, 1997, in press; Uhl-Bien, Graen, and Scandura, 2000).

Human capital attributes of managers include traits (e.g., House, 1977; Kenny and Zaccaro, 1983) and behavioural styles (e.g., Lewin, Lippitt, and White, 1939; Podsakoff, Todor, and Skov, 1982); whereas situational attributes of performance evaluation contexts include task structure (Fiedler, 1971), the availability of performance evaluation substitutes (Kerr and Jermier, 1978), the nature of the decision process (Vroom and Yetton, 1973) and the quality of manager-member exchange (Dansereau, Graen, and Haga, 1975). Utilizing the SNM approach may help alleviate the resistance to change such as downsizing, lay-offs or restructuring (Neumann, 1989; Isabella, 1990; Torenvlied and Velner, 1998). Business process management is concerned with process-aware information systems called work flow management systems (Aalst and Hee 2002, Jablonski and Bussler 1996, Leymann and Roller 1999). Managers or supervisors, who control the flow of information downward, may cause a delay in productivity (Callan, 1993; DiPadova and Faerman, 1993; Johlke and Duhan, 2001). With the availability of more electronic data, new ways of gathering data are enabled (Feldman 1987). By analyzing the history of a user's e-mail interactions, personal networks can be extracted (Ellison, 2007; Tener, et. al., 2008). One of the first social-networked tools developed for this purpose is ContactMap (Nardi, Whittaker, Isaacs, Creech, Johnson and Hainsworth 2002). BuddyGraph (www.buddygraph.com) and MetaSight (www.metasight.co.uk) are other examples. By using logs on e-mail trace as a starting point, meaningful organizational patterns can be distinguished (Begole, Tang, Smith and Yankelovich 2002, Farnham, Kelly, Portnoy and Schwartz 2004, Farnham, Portnoy and Turski 2004, Fisher and Dourish 2004, Nardi et al. 2002, Ogata, Yano, Furugori and Jin 2001). Similarly, information on the Web can be used for

the analysis of social networks (Culotta, Bekkerman and McCallum 2004). Work flow management systems typically register the enabling, start and completion of activities (Aalst and Hee 2002, Fischer 2001, Jablonski and Bussler 1996, Leymann and Roller 1999). When people are involved in events, logs will typically contain information on the person executing the event referring to an activity and a case (Aalst et al. 2003).

The major problem in measuring employee performance in cases where it is difficult to draw a straightforward connection between performance and profitability is the setting of a standard by which to judge the performance. One method of setting an absolute objective performance standard—rarely used because it is costly and only appropriate for simple repetitive tasks—is time-and-motion studies, which study in detail how fast it is possible to do a certain task. These have been used constructively in the past, particularly in manufacturing. More generally, however, even within the field of objective performance evaluation, some form of relative performance evaluation must be used. Typically this takes the form of comparing the performance of a worker to that of his peers in the firm or industry, perhaps taking account of different exogenous circumstances affecting that. The reason that employees are often paid according to hours of work rather than by direct measurement of results is that it is often more efficient to use indirect systems of controlling the quantity and quality of effort, due to a variety of informational and other issues (e.g., turnover costs, which determine the optimal minimum length of relationship between firm and employee). The successful manager of tomorrow has to be understood from how the network topology of his target sphere of influence assigns a key role to other people. The identification and establishment

of a strong connection with these key people is essential for the manager to create an effective two-way channel to exert his influence and receive feedback on his actions. In a few words, a network perspective is indispensable for efficient and effective performance evaluation.

Clearly, the network perspective in its emphasis on social relations, embeddedness, social capital, and social structure, both incorporates strands emphasized within previous performance evaluation research, and points in new directions.

## Bibliography

Howard Risher, Charles H. Fay (2007), "Managing for Better Performance: Enhancing Federal Performance Management Practices", Human Capital Management Series, IBM Centre for the Business of Government, International Telecommunication Union, www.itu.int.

K. Khazaei, A. Khalkhali and N. Eslami, "Relationship Between Organizational Citizenship Behavior and Performance of School Teachers in West of Mazandaran Province",IDOSI Publications, ISSN 1818-4952, World Applied Sciences Journal 13 (2): 324-330,  2011

Daniel G. Bachrach, Benjamin C. Powell, Elliot Bendoly, R. Glenn Richey, "Organizational Citizenship Behavior and Performance Evaluations: Exploring the Impact of Task Interdependence", Journal of OCB, evaluations and task independence, 2003

Nielsen, T. M., Hrivnak, G. A., & Shaw, M. (2009). Organizational citizenship behavior and performance: A meta-analysis of group-level research. Small Group Research, 40(5), 555-577.

Bernardin, H.J., Hagan, C., Ross, S. and Kane, J.S. (1995), "The effects of a 360 degree appraisal system on managerial performance - Upward feedback: the ups and downs of it", Tenth annual conference of the Society for Industrial and Organizational Psychology, Orlando, FL, May 1995.

Bracken, D.W., Timmreck, C.W., and Fleenor, J. (2002), "360 Feedback from a different angle", Journal of Management Development. 40 (1) 3-20.

L. Cao, P. Yu, C. Zhang, and Y. Zhao, Domain Driven Data Mining. Springer, 2009.

L. Cao, "Domain-Driven Actionable Knowledge Discovery," IEEE Intelligent Systems, vol. 22, no. 4, pp. 78-89, July 2007.

L. Cao, Y. Zhao, H. Zhang, D. Luo, and C. Zhang, "Flexible Frameworks for Actionable Knowledge Discovery," IEEE Trans. Data and Knowledge Eng, preprint, 4 June 2009, doi:
10.1109/TKDE.2009.143.

Brass, Daniel (2003), "A Social Network Perspective on Human Resources Management." In Rob Cross, Andrew Parker, and Lisa Sasson (eds), Networks in the Knowledge Economy, Oxford University Press, New York, p. 283-323.

A.G. Sheard (2007), "A Role Based Perspective on leadership as a Network of Relationships", Journal of Management Development, 26 (4) pg 331-352.

Jaideep Srivastava, Nishith Pathak, Sandeep Mane, Muhammad A. Ahmad (2006), "Data Mining for Social Network Analysis", IEEE ICDM 2006, Hong Kong, University of Minnesota

Howard Risher, Charles H. Fay (2007), "Managing for Better Performance: Enhancing Federal Performance Management Practices", Human Capital Management Series, IBM Centre for the Business of Government, International Telecommunication Union, www.itu.int.

Cross, Rob and Andrew Parker (2004), "The Hidden Power of Social Networks", Boston: Harvard Business School Publishing.

Kathleen Marvin (2002), "Social Network Analysis-The Hidden Power of Human Networks", BAODN Newsletter, the Creative Mind, Booz Allen Hamilton, Fourth Quarter. www.marvincoach.com.

Carman Neustaedter, A.J. Bernheim Brush, Marc A. Smith, and Danyel Fisher (2005), "The Social Network and Relationship Finder: Social Sorting for Email Triage", Microsoft Research, Redmond, WA.

Barry Wellman (2004), "The mobileized society – communication modes and social networks", Receiver Magazine, Vodafone Group.

Lee Humphreys (2007), "Mobile Social Networks and Social Practice: A Case Study of Dodgeball", Journal of Computer-Mediated Communication, 13(1), article 17.

Nathan Eagle, Alex (Sandy) Pentland, David Lazer (2006), "Inferring Social Network Structure using Mobile Phone Data", MIT Design Laboratory, Massachusetts Institute of Technology, Cambridge, MA.

Yi-Fan Chen and Katie Lever (2004), "Relationships among mobile phones, social networks, and academic achievement: A comparison of US and Taiwanese college students", The State University, New Jersey.